Teacher's Scoring Guide

Grade 7
Mathematics

Fall 2008

Indiana Statewide Testing for Educational Progress

20944-W

INTRODUCTION

During the fall of 2008, Indiana students in Grades 3 through 8 and Grade 10 participated in the administration of *ISTEP+*. The test for *ISTEP+* Fall 2008 consisted of a multiple-choice section and an applied skills section. For the fall testing, the multiple-choice section was machine-scored. The applied skills section, which consisted of open-ended questions, was hand-scored.

Test results for both the multiple-choice and applied skills sections as well as images of the applied skills student responses will be available online in late November 2008. *ISTEP+* Student Labels and Student Reports will be sent to the schools in early December 2008. It is the expectation of the Indiana Department of Education that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To support this endeavor, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide*. The purpose of this guide is to help teachers to:

- understand the methods used to score the *ISTEP+* Fall 2008 applied skills section, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's applied skills responses.

There are three scoring guides for Grade 7, English/Language Arts, Mathematics, and Science. In this Mathematics guide, you will find:

- an introduction,
- a list of the Mathematics Grade 6 Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.in.gov) or call the Indiana Department of Education at (317) 232-9050.

* Because *ISTEP+* is administered early in the fall, the Grade 7 test is based on the academic standards for Grade 6.

INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS SECTION

The applied skills section that students responded to this past fall in Grade 7 allowed the students to demonstrate their understanding of Mathematics in a variety of ways, such as applying formulas, explaining a solution, transforming a figure, or interpreting a table or graph.

STRUCTURE

The applied skills section for Grade 7 Mathematics was divided into two tests, Test 7 and Test 8. Each test consisted of seven open-ended questions. Students were permitted to use calculators on Test 8 but **not** on Test 7.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for this administration of the *ISTEP+* Grade 7 Mathematics assessment has a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide. As a result, figures and diagrams in measurement questions will appear smaller in this guide than in the actual test book.

Rubrics are established prior to testing to describe the performance criteria for each score point. The performance criteria determine the number of score points possible for each question. This process ensures that all responses are judged objectively.

1. Students should not be penalized for omitting:
   - degree symbols
   - dollar signs ($) or cent signs (¢)
   - zeros for place holders; for example, either 0.75 or .750 could be used
   - labels for word problems; for example, *miles*

     NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for:
   - spelling or grammar errors
   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for:
   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work)
   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which response the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.
   - line graphs only if lines connect the points

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

MATHEMATICS GRADE 6
INDIANA ACADEMIC STANDARDS

❑ **Number Sense**
Students compare and order positive and negative integers, decimals, fractions, and mixed numbers. They find multiples and factors.

❑ **Computation**
Students solve problems involving addition, subtraction, multiplication, and division of integers. They solve problems involving fractions, decimals, ratios, proportions, and percentages.

❑ **Algebra and Functions**
Students write verbal expressions and sentences as algebraic expressions and equations. They evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results. They investigate geometric relationships and describe them algebraically.

❑ **Geometry**
Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.

❑ **Measurement**
Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems. They calculate with temperature and money, and choose appropriate units of measure in other areas.

❑ **Data Analysis and Probability**
Students compute and analyze statistical measures for data sets. They determine theoretical and experimental probabilities and use them to make predictions about events.

❑ **Problem Solving**
Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

The Content Skills used for each of the Process Skill questions in the Grade 7 applied skills section are shown in the following chart.

PROCESS SKILL QUESTIONS

Question	Process Skill	Content Skills *Item may map to more than one indicator in a standard.*
Test 7		
3	Problem Solving	Computation, Measurement
5	Problem Solving	Computation, Algebra and Functions
Test 8		
2	Problem Solving	Computation, Measurement
4	Problem Solving	Computation, Measurement

Test 7—Question 1: Algebra and Functions

1 The density (d) of a substance can be found by using the formula $d = \frac{m}{v}$, where m represents the mass of the substance and v represents the volume of the substance.

What is the density, in grams per cubic centimeter, of a substance with a mass of 120 grams and a volume of 32 cubic centimeters?

Show All Work

Answer _____ grams per cubic centimeter

Exemplary Response:

- 3.75 grams per cubic centimeter

AND

Sample Process:

- $d = \frac{m}{v}$
  $= \frac{120}{32}$
  $= 3.75$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

SCORE POINT 2

1 The density (d) of a substance can be found by using the formula $d = \frac{m}{v}$, where m represents the mass of the substance and v represents the volume of the substance.

What is the density, in grams per cubic centimeter, of a substance with a mass of 120 grams and a volume of 32 cubic centimeters?

Show All Work

$\frac{120}{32}$

$32\overline{)120.0}$ → 3.75, 96, 240, 224, 160, 160, 0

Answer 3.75 grams per cubic centimeter

Test 7—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and the correct answer of 3.75 grams per cubic centimeter. The response receives a Score Point 2.

SCORE POINT 1

1 The density (d) of a substance can be found by using the formula $d = \frac{m}{v}$, where m represents the mass of the substance and v represents the volume of the substance.

What is the density, in grams per cubic centimeter, of a substance with a mass of 120 grams and a volume of 32 cubic centimeters?

Show All Work

$\frac{120}{32}$

$32\overline{)120.00}$ → $3.4\overline{34}$, 96, 140, 128, 120

$32 \times 4 = 128$

$32 \times 5 = 160$

$32 \times 3 = 96$

Answer $3.4\overline{34}$ grams per cubic centimeter

Test 7—Question 1 Score Point 1

This response shows a correct process. However, the student makes an error in computation when dividing 120 by 32, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

Test 7—Question 1
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

1 The density (d) of a substance can be found by using the formula $d = \frac{m}{v}$, where m represents the mass of the substance and v represents the volume of the substance.

What is the density, in grams per cubic centimeter, of a substance with a mass of 120 grams and a volume of 32 cubic centimeters?

Show All Work

$$\begin{array}{r} 120 \\ \times\ 32 \\ \hline 240 \\ 360 \\ \hline 3{,}840 \end{array}$$

Answer 3, 840 grams per cubic centimeter

Test 7—Question 2: Data Analysis and Probability

2 On Saturday, Burt's Nursery filled 17 orders for plants. The number of plants in each order is shown in the list below.

10, 52, 24, 36, 14, 21, 20, 43, 16, 20, 14, 12, 23, 31, 58, 19, 24

Use the numbers in the list to make an ordered stem-and-leaf plot.

Number of Plants

Stem	Leaf

KEY
1|9 = 19

Exemplary Response:

- **Number of Plants**

Stem	Leaf
1	0 2 4 4 6 9
2	0 0 1 3 4 4
3	1 6
4	3
5	2 8

Rubric:

2 points	Exemplary response
1 point	9 to 16 leaves correctly plotted and ordered; all stems correctly plotted and ordered OR All stems correctly plotted and ordered; all leaves correctly plotted but not ordered
0 points	Other

Test 7—Question 2
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives all 17 correct entries in the stem-and-leaf plot. The response receives a Score Point 2.

SCORE POINT 2

2 On Saturday, Burt's Nursery filled 17 orders for plants. The number of plants in each order is shown in the list below.

10, 52, 24, 36, 14, 21, 20, 43, 16, 20, 14, 12, 23, 31, 58, 19, 24

Use the numbers in the list to make an ordered stem-and-leaf plot.

Number of Plants

Stem	Leaf
1	0 2 4 4 6 9
2	0 0 1 3 4 4
3	1 6
4	3
5	2 8

KEY
1|9 = 19

Test 7—Question 2
Score Point 1

This response shows all stems correctly plotted and ordered. However, the student incorrectly orders the leaves in the stem-and-leaf plot. Therefore, this response receives a Score Point 1.

SCORE POINT 1

2 On Saturday, Burt's Nursery filled 17 orders for plants. The number of plants in each order is shown in the list below.

~~10~~, ~~52~~, ~~24~~, ~~36~~, ~~14~~, ~~21~~, ~~20~~, ~~43~~, ~~16~~, ~~20~~, ~~14~~, ~~12~~, ~~23~~, ~~31~~, ~~58~~, ~~19~~, ~~24~~

Use the numbers in the list to make an ordered stem-and-leaf plot.

Number of Plants

Stem	Leaf
1	0, 4, 6, 4, 2, 9
2	4, 1, 0, 0, 3, 4
3	6, 1,
4	3,
5	2, 8,

KEY
1|9 = 19

SCORE POINT 0

2 On Saturday, Burt's Nursery filled 17 orders for plants. The number of plants in each order is shown in the list below.

10, 52, 24, 36, 14, 21, 20, 43, 16, 20, 14, 12, 23, 31, 58, 19, 24

Use the numbers in the list to make an ordered stem-and-leaf plot.

Number of Plants

Stem	Leaf
1	0
1	2
1	4
1	4
1	6
1	9
2	0
2	0
2	1
2	3
2	4
2	4
3	1
3	6
4	3
5	2

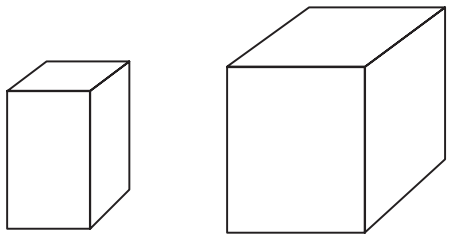
KEY
1|9 = 19

Test 7—Question 2
Score Point 0

This response does not show the correct order of stems or leaves in the stem-and-leaf plot. Therefore, this response receives a Score Point 0.

Test 7—Question 3: Problem Solving

3 Cassie makes two wax candles. Both candles are rectangular prisms, as shown in the diagram below.



First Second

The first candle measures 4 centimeters wide, 6 centimeters long, and 10 centimeters high.

The second candle measures 8 centimeters wide, 10 centimeters long, and 12 centimeters high.

On the line below, write the ratio of the volume, in cubic centimeters, of the first candle to the volume, in cubic centimeters, of the second candle. Write your ratio in LOWEST TERMS.

Show All Work

Ratio _____

Exemplary Response:

- $\frac{1}{4}$

OR

- 1 to 4

OR

- 1:4

AND

- Correct process

Sample Process:

- Volume of first candle: $4 \times 6 \times 10 = 240$

  Volume of second candle: $8 \times 10 \times 12 = 960$

  $\frac{240}{960} = \frac{24}{96} = \frac{8}{32} = \frac{1}{4}$

OR

- Other valid process

Rubric:

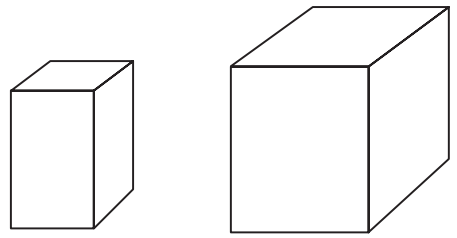
2 points	Exemplary response
1 point	Correct answer only
	OR
	Correct process; error in computation
	OR
	Correct ratio not shown in lowest terms
0 points	Other

Test 7—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and the correct ratio of $\frac{1}{4}$. The response receives a Score Point 2.

SCORE POINT 2

3 Cassie makes two wax candles. Both candles are rectangular prisms, as shown in the diagram below.



First Second

The first candle measures 4 centimeters wide, 6 centimeters long, and 10 centimeters high.

The second candle measures 8 centimeters wide, 10 centimeters long, and 12 centimeters high.

On the line below, write the ratio of the volume, in cubic centimeters, of the first candle to the volume, in cubic centimeters, of the second candle. Write your ratio in LOWEST TERMS.

Show All Work

Candle 1) 6 length
× 4 width
24
× 10 height
240

Candle 2) 10 length
× 8 width
80
× 12 height
+ 160
800
960

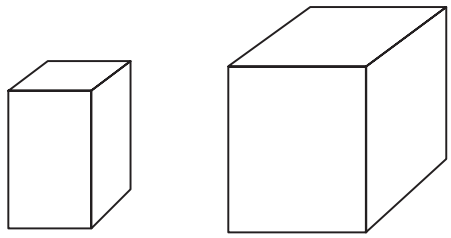
$\frac{240 \div 10}{960 \div 10} = \frac{24 \div 3}{96 \div 3}$

$= \frac{8 \div 8}{32 \div 8} = \frac{1}{4}$

Ratio $\frac{1}{4}$

SCORE POINT 1

3 Cassie makes two wax candles. Both candles are rectangular prisms, as shown in the diagram below.



First Second

The first candle measures 4 centimeters wide, 6 centimeters long, and 10 centimeters high.

The second candle measures 8 centimeters wide, 10 centimeters long, and 12 centimeters high.

On the line below, write the ratio of the volume, in cubic centimeters, of the first candle to the volume, in cubic centimeters, of the second candle. Write your ratio in LOWEST TERMS.

Show All Work

6 cm × 4 = 24 cm 24 cm × 10 = 240 cm 10 cm × 8 = 80 cm 80 cm × 12 = 160, + 800 = 960 cm.

Ratio $\frac{240 \text{ cm}}{960 \text{ cm}}$

Test 7—Question 3 Score Point 1

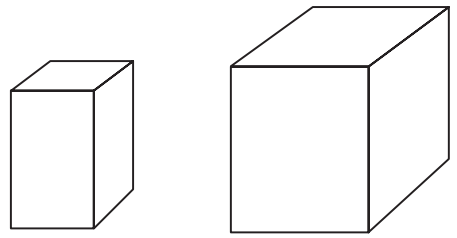
This response shows a correct process and a correct ratio. However, the student does not show the ratio in lowest terms. Therefore, this response receives a Score Point 1.

Test 7—Question 3
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

3 Cassie makes two wax candles. Both candles are rectangular prisms, as shown in the diagram below.



First Second

The first candle measures 4 centimeters wide, 6 centimeters long, and 10 centimeters high.

The second candle measures 8 centimeters wide, 10 centimeters long, and 12 centimeters high.

On the line below, write the ratio of the volume, in cubic centimeters, of the first candle to the volume, in cubic centimeters, of the second candle. Write your ratio in LOWEST TERMS.

Show All Work

1st
$V = L \cdot w \cdot h$
$V = 6 \cdot 4 \cdot 10$
$V = 240 cm.^3$

2nd
$V = L \cdot w \cdot h$
$V = 10 \cdot 8 \cdot 12$
$V = 960 cm.^3$

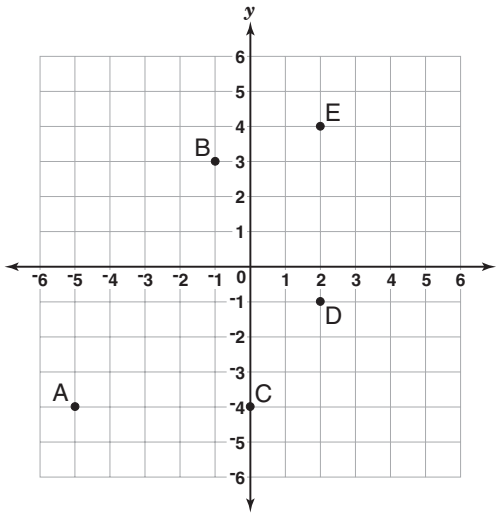
$\overset{1}{120} \times 8 = 960$

$960 - 240 = 720$

Ratio $720\ cm.^3$

Test 7—Question 4: Algebra and Functions

4 Write the coordinates of each point graphed on the coordinate plane below.



A (_____, _____)

B (_____, _____)

C (_____, _____)

D (_____, _____)

E (_____, _____)

Exemplary Response:

- A ($^{-}$5, $^{-}$4)
  B ($^{-}$1, 3)
  C (0, $^{-}$4)
  D (2, $^{-}$1)
  E (2, 4)

Rubric:

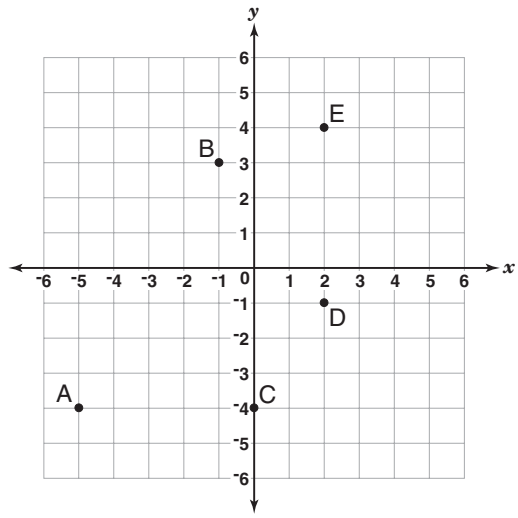
2 points	Exemplary response
1 point	Three or four correct coordinate pairs
0 points	Other

Test 7—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives the correct coordinates for all five points. The response receives a Score Point 2.

SCORE POINT 2

4 Write the coordinates of each point graphed on the coordinate plane below.



A (-5, -4)

B (-1, 3)

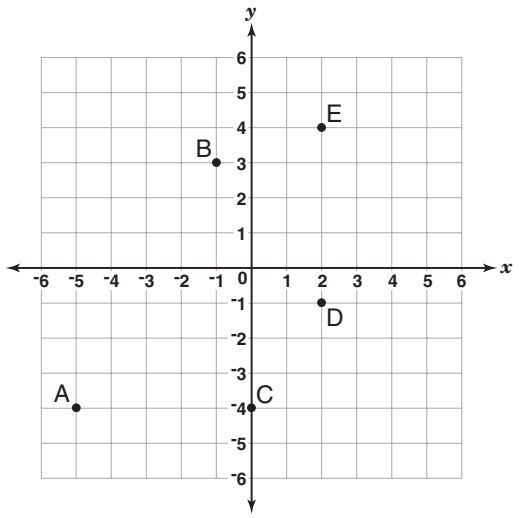
C (0, -4)

D (2, -1)

E (2, 4)

SCORE POINT 1

4 Write the coordinates of each point graphed on the coordinate plane below.



A (-5, -4)

B (-1, 3)

C (0, -4)

D (2, -1)

E (0, -4)

Test 7—Question 4
Score Point 1

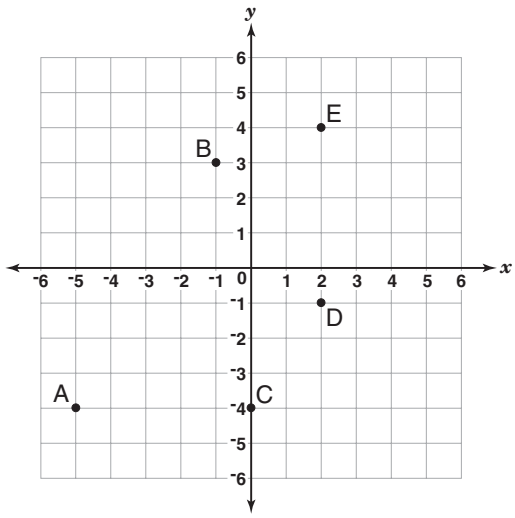
This response shows only the correct coordinates for four points. The student gives incorrect coordinates for point E. Therefore, this response receives a Score Point 1.

Test 7—Question 4
Score Point 0

This response shows only the correct coordinates for two points. Therefore, this response receives a Score Point 0.

SCORE POINT 0

4 Write the coordinates of each point graphed on the coordinate plane below.



A (-4, -5)

B (3, -1)

C (0, -4)

D (2, -1)

E (4, 2)

Test 7—Question 5: Problem Solving

5 Larry weighs 120 pounds and rides his bike at an average speed of 12 miles per hour. Jason weighs 90 pounds and rides his bike at an average speed of 9 miles per hour. Larry and Jason start at the same place and ride their bikes in opposite directions.

On the lines below, identify the information that is NOT needed to determine how far apart Larry and Jason will be after riding their bikes for 10 minutes.

_____

_____

_____

_____

How far apart, in miles, will Larry and Jason be after riding their bikes for 10 minutes?

Show All Work

Answer _____ miles

Exemplary Response:

- The weights of the two children

OR

- Other valid response

AND

- 3.5 miles

AND

- Correct process

Sample Process:

- Distance each child traveled

  10 minutes $= \frac{1}{6}$ hour

  Larry's distance traveled: $12 \times \frac{1}{6} = 2$ miles

  Jason's distance traveled: $9 \times \frac{1}{6} = 1.5$ miles

  Total distance apart: $2 + 1.5 = 3.5$ miles

OR

- Other valid process

NOTE: Award 1 point for a correct process with an error in computation.

Rubric:

3 points	Exemplary response
2 points	Two correct components
1 point	One correct component OR Correct process for determining distance one child traveled
0 points	Other

SCORE POINT 3

5 Larry weighs 120 pounds and rides his bike at an average speed of 12 miles per hour. Jason weighs 90 pounds and rides his bike at an average speed of 9 miles per hour. Larry and Jason start at the same place and ride their bikes in opposite directions.

On the lines below, identify the information that is NOT needed to determine how far apart Larry and Jason will be after riding their bikes for 10 minutes.

You do not need to know how much Larry and Jason weigh to detirmine how far apart they will be after riding for 10 minutes.

How far apart, in miles, will Larry and Jason be after riding their bikes for 10 minutes?

Show All Work

Larry - $\frac{12}{60} = \frac{x}{10}$

$12 \cdot 10 = 120$

$60 \cdot x = 120$

$x = 2$ miles

$60\overline{)120}$ → 2, -120, 0

Jason - $\frac{9}{60} = \frac{x}{10}$

$9 \cdot 10 = 90$

$60 \cdot x = 90$

$60\overline{)90.0}$ → 1.5, -60, 300, -300, 0

$x = 1.5$ miles

2 miles + 1.5 miles equals 3.5 miles

Answer 3.5 miles

Test 7—Question 5 Score Point 3

This response matches the exemplary response contained in the rubric. The student correctly identifies the information not needed, shows a correct process, and gives the correct answer of 3.5 miles. The response receives a Score Point 3.

Test 7—Question 5
Score Point 2

This response correctly identifies the information not needed and shows a correct process. However, the student makes an error in computation when dividing 9 by 6, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

SCORE POINT 2

5 Larry weighs 120 pounds and rides his bike at an average speed of 12 miles per hour. Jason weighs 90 pounds and rides his bike at an average speed of 9 miles per hour. Larry and Jason start at the same place and ride their bikes in opposite directions.

On the lines below, identify the information that is NOT needed to determine how far apart Larry and Jason will be after riding their bikes for 10 minutes.

Larry is 120 lb and Jason is 90 lb is information the is not needed to determine how far Larry is from Jason.

How far apart, in miles, will Larry and Jason be after riding their bikes for 10 minutes?

Show All Work

$6\overline{)12}$ → 2

$6\overline{)9}$ → $1\frac{1}{3}$, -6, 3

$1\frac{1}{3} + 2$

$1\frac{1}{3}$ $1\frac{3}{3}$

$1\frac{3}{3} + 1\frac{1}{3} = 3\frac{1}{3}$ miles

Answer $3\frac{1}{3}$ miles

SCORE POINT 1

5 Larry weighs 120 pounds and rides his bike at an average speed of 12 miles per hour. Jason weighs 90 pounds and rides his bike at an average speed of 9 miles per hour. Larry and Jason start at the same place and ride their bikes in opposite directions.

On the lines below, identify the information that is NOT needed to determine how far apart Larry and Jason will be after riding their bikes for 10 minutes.

their weight

How far apart, in miles, will Larry and Jason be after riding their bikes for 10 minutes?

Show All Work

$$\begin{array}{r} 120 \\ -\ 12 \\ \hline 108 \end{array} \qquad \begin{array}{r} 90 \\ -\ 9 \\ \hline 81 \end{array} \qquad \begin{array}{r} 8.1 \\ 10.8 \end{array}$$

Answer 2.7 miles

Test 7—Question 5
Score Point 1

This response correctly identifies the information not needed. However, the student shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 1.

Test 7—Question 5
Score Point 0

This response incorrectly identifies the information not needed, shows an incorrect process, and gives an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

5 Larry weighs 120 pounds and rides his bike at an average speed of 12 miles per hour. Jason weighs 90 pounds and rides his bike at an average speed of 9 miles per hour. Larry and Jason start at the same place and ride their bikes in opposite directions.

On the lines below, identify the information that is NOT needed to determine how far apart Larry and Jason will be after riding their bikes for 10 minutes.

They go in opposite directions

How far apart, in miles, will Larry and Jason be after riding their bikes for 10 minutes?

Show All Work

$$\begin{array}{r} 12 \\ \times\ 10 \\ \hline 120 \end{array} \qquad \begin{array}{r} 8 \\ \times\ 10 \\ \hline 40 \end{array} \qquad \begin{array}{r} {\scriptstyle 01} \\ \not{1}\not{2}0 \\ -\ 90 \\ \hline 30 \end{array}$$

Answer 30 miles

Test 7—Question 6: Geometry

6 Two angles in a triangle measure $82\frac{1}{4}°$ and $26\frac{1}{2}°$.

What is the measure of the third angle in this triangle?

Show All Work

Answer _____ °

Exemplary Response:

- $71\frac{1}{4}°$

OR

- 71.25°

AND

- Correct process

Sample Process:

- $82\frac{1}{4}° + 26\frac{1}{2}° = 108\frac{3}{4}°$

  $180° - 108\frac{3}{4}° = 71\frac{1}{4}°$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

Test 7—Question 6
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 71.25°. The response receives a Score Point 2.

SCORE POINT 2

6 Two angles in a triangle measure $82\frac{1}{4}°$ and $26\frac{1}{2}°$.

What is the measure of the third angle in this triangle?

Show All Work

$82\frac{1}{4} = 82.25$

$26\frac{1}{2} = +\ 26.50$

108.75

$180.00 - 108.75 = 71.25$

Answer 71.25 °

Test 7—Question 6
Score Point 1

This response shows a correct process. However, the student makes an error in computation when adding 26.50 and 82.25, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 Two angles in a triangle measure $82\frac{1}{4}°$ and $26\frac{1}{2}°$.

What is the measure of the third angle in this triangle?

Show All Work

$82.25 + 26.50 = 108.70$

$180.00 - 108.70 = 71.30$

$\frac{30}{100}$

Answer $71\frac{3}{10}$ °

SCORE POINT 0

6 Two angles in a triangle measure $82\frac{1}{4}°$ and $26\frac{1}{2}°$.

What is the measure of the third angle in this triangle?

Show All Work

7 11 12
~~82.25~~
- 26.50
55.75

Answer $55\frac{3}{4}$ °

Test 7—Question 6
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 7—Question 7: Computation

7 Jenna and Ryan are painting the ceiling of a room. Ryan has painted $\frac{3}{8}$ of the ceiling and Jenna has painted $\frac{5}{12}$ of the ceiling.

What fraction of the ceiling have they painted in all?

Show All Work

Answer _____ of the ceiling

Exemplary Response:

- $\frac{19}{24}$

AND

- Correct process

Sample Process:

- $\frac{3}{8} + \frac{5}{12}$
  $= \frac{9}{24} + \frac{10}{24}$
  $= \frac{19}{24}$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

Test 7—Question 7
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $\frac{19}{24}$. The response receives a Score Point 2.

SCORE POINT 2

7 Jenna and Ryan are painting the ceiling of a room. Ryan has painted $\frac{3}{8}$ of the ceiling and Jenna has painted $\frac{5}{12}$ of the ceiling.

What fraction of the ceiling have they painted in all?

Show All Work

8:8, 16, (24)
12:12, (24)

$\frac{3}{8} \times \frac{3}{3} = \frac{9}{24}$

$+ \frac{5}{12} \times \frac{2}{2} = \frac{10}{24}$

$\frac{19}{24}$

Answer $\frac{19}{24}$ of the ceiling

Test 7—Question 7
Score Point 1

This response shows a correct process. However, the student makes an error in computation when multiplying 3 and 3, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Jenna and Ryan are painting the ceiling of a room. Ryan has painted $\frac{3}{8}$ of the ceiling and Jenna has painted $\frac{5}{12}$ of the ceiling.

What fraction of the ceiling have they painted in all?

Show All Work

$\frac{3}{8} \times 3 = \frac{6}{24}$

$\frac{5}{12} \times 2 = \frac{10}{24}$

$\frac{6}{24} + \frac{10}{24}$ $\frac{16}{24} \div 8\frac{2}{3}$

Answer $\frac{2}{3}$ of the ceiling

Test 7—Question 7
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

7 Jenna and Ryan are painting the ceiling of a room. Ryan has painted $\frac{3}{8}$ of the ceiling and Jenna has painted $\frac{5}{12}$ of the ceiling.

What fraction of the ceiling have they painted in all?

Show All Work

$$\frac{3}{8} + \frac{5}{12} = \frac{8}{20}$$

Answer $\frac{8}{20}$ of the ceiling

Test 8—Question 1: Data Analysis and Probability

1 At Farnworth's Restaurant, customers who want seafood can choose from 4 different types of fish cooked 3 different ways. The types of fish are cod, halibut, salmon, and trout. The fish can be baked, fried, or grilled.

In the box below, show all the different seafood options a customer can order.

Exemplary Response:

- BC, FC, GC
  BH, FH, GH
  BS, FS, GS
  BT, FT, GT

OR

- Other valid response

Rubric:

2 points	Exemplary response
1 point	Seven to eleven correct combinations listed
0 points	Other

Test 8—Question 1
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows all 12 correct combinations. The response receives a Score Point 2.

SCORE POINT 2

1 At Farnworth's Restaurant, customers who want seafood can choose from 4 different types of fish cooked 3 different ways. The types of fish are cod, halibut, salmon, and trout. The fish can be baked, fried, or grilled.

In the box below, show all the different seafood options a customer can order.

cod-baked
cod-fried
cod-grilled
halibut-baked
halibut-fried
halibut-grilled
salmon-baked
salmon-fried
salmon-grilled
trout-baked
trout-fried
trout-grilled

Test 8—Question 1
Score Point 1

This response shows only 9 correct combinations. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1 At Farnworth's Restaurant, customers who want seafood can choose from 4 different types of fish cooked 3 different ways. The types of fish are cod, halibut, salmon, and trout. The fish can be baked, fried, or grilled.

In the box below, show all the different seafood options a customer can order.

Cod-Baked
Cod-Fried
Cod-Grilled

Salmon-Baked
Salmon-Fried
Salmon-Grilled

9 different way
to make 4 types
3 ways.

Trout-Baked
Trout-Fried
Trout-Grilled

SCORE POINT 0

1 At Farnworth's Restaurant, customers who want seafood can choose from 4 different types of fish cooked 3 different ways. The types of fish are cod, halibut, salmon, and trout. The fish can be baked, fried, or grilled.

In the box below, show all the different seafood options a customer can order.

cod, halibut, salmon, and trout

Test 8—Question 1
Score Point 0

This response does not show any combinations. Therefore, this response receives a Score Point 0.

Test 8—Question 2: Problem Solving

2 Stacie and her little brother Conner went to a game store. Stacie spent $54.60 on games for her brother Conner. She spent 25% more on games for herself than she did on games for her brother.

What was the total combined cost of the games Stacie bought for herself and for her brother Conner?

Show All Work

Answer $_____

Exemplary Response:

- $122.85

AND

- Correct process

Sample Process:

- $54.60 \times 0.25 = 13.65$

  $54.60 + 13.65 = 68.25$

  $54.60 + 68.25 = 122.85$

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct process; error in computation
1 point	Correct process for determining 25% of $54.60 OR Correct process for determining 125% of $54.60
0 points	Other

SCORE POINT 3

2 Stacie and her little brother Conner went to a game store. Stacie spent $54.60 on games for her brother Conner. She spent 25% more on games for herself than she did on games for her brother.

What was the total combined cost of the games Stacie bought for herself and for her brother Conner?

Show All Work

$$\begin{array}{r} \not{5}\not{4}.60 \\ \times \quad .25 \\ \hline 27300 \\ 109200 \\ \hline 13.6500 \end{array} \qquad \begin{array}{r} {\scriptstyle 1} \\ 54.60 \\ +\,13.65 \\ \hline 68.25 \end{array}$$

Conner = $54.60
herself = $68.25

$$\begin{array}{r} {\scriptstyle 1} \\ 54.60 \\ +\,68.25 \\ \hline 122.85 \end{array}$$

Answer $ 122.85

Test 8—Question 2 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $122.85. The response receives a Score Point 3.

SCORE POINT 2

2 Stacie and her little brother Conner went to a game store. Stacie spent $54.60 on games for her brother Conner. She spent 25% more on games for herself than she did on games for her brother.

What was the total combined cost of the games Stacie bought for herself and for her brother Conner?

Show All Work

$$\begin{array}{r} \not{\$}\not{5}\not{4}.60 \\ \times \quad 0.25 \\ \hline 27300 \\ +\,109200 \\ \hline \$13.65\not{0}\not{0} \end{array} \qquad \begin{array}{r} {\scriptstyle 1} \\ \$54.60 \\ +\,13.50 \\ \hline \$68.10 \end{array}$$

$$\begin{array}{r} {\scriptstyle 1} \\ \$54.60 \\ +\,68.10 \\ \hline \$122.70 \end{array}$$

Answer $ $122.70

Test 8—Question 2 Score Point 2

This response shows a correct process. However, the student makes a transcription error when writing $13.50 instead of $13.65, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 8—Question 2
Score Point 1

This response shows only a correct process for determining 125% of $54.60. Therefore, this response receives a Score Point 1.

SCORE POINT 1

2 Stacie and her little brother Conner went to a game store. Stacie spent $54.60 on games for her brother Conner. She spent 25% more on games for herself than she did on games for her brother.

What was the total combined cost of the games Stacie bought for herself and for her brother Conner?

Show All Work

$54.60
× 25%
27300
+ 109200
$13.6500

$54.60
+ $13.65
$68.25

Answer $ 68.25

Test 8—Question 2
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 Stacie and her little brother Conner went to a game store. Stacie spent $54.60 on games for her brother Conner. She spent 25% more on games for herself than she did on games for her brother.

What was the total combined cost of the games Stacie bought for herself and for her brother Conner?

Show All Work

$54.60 × 4 = 218.40

25% = $\frac{1}{4}$

Answer $ 218.40

Test 8—Question 3: Algebra and Functions

3 John used 48 apples to bake 8 pies. He used an equal number of apples for each pie.

On the line below, write an equation that can be used to find the number (n) of apples in each pie.

Equation _____

Now solve the equation you wrote. Write your answer on the line below.

Answer _____ apples

Exemplary Response:

- $8 \times n = 48$

OR

- $n = 48 \div 8$

OR

- Other valid equation

AND

- 6 apples

NOTE: Award 1 point for a correct answer based on an incorrect equation.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

Test 8—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct equation and gives the correct answer of 6 apples. The response receives a Score Point 2.

SCORE POINT 2

3 John used 48 apples to bake 8 pies. He used an equal number of apples for each pie.

On the line below, write an equation that can be used to find the number (n) of apples in each pie.

Equation n • 8 = 48

Now solve the equation you wrote. Write your answer on the line below.

Answer 6 apples

n • 8 = 48
6 • 8 = 48
n = 6 apples

Test 8—Question 3
Score Point 1

This response shows the correct answer of 6 apples. However, the student gives an incorrect equation. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 John used 48 apples to bake 8 pies. He used an equal number of apples for each pie.

On the line below, write an equation that can be used to find the number (n) of apples in each pie.

Equation n ÷ 48 = 8

Now solve the equation you wrote. Write your answer on the line below.

Answer 6 apples

SCORE POINT 0

3 John used 48 apples to bake 8 pies. He used an equal number of apples for each pie.

On the line below, write an equation that can be used to find the number (n) of apples in each pie.

Equation 3 × n = 48

Now solve the equation you wrote. Write your answer on the line below.

Answer n = 144 apples

Test 8—Question 3
Score Point 0

This response shows an incorrect equation and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 4: Problem Solving

4 Jessica needs new carpet in her room. The carpet she wants costs $2.95 per square yard.

If Jessica needs to buy a 4-yard by 5-yard piece of carpet, what will be the cost of the carpet after paying a 6% sales tax?

Show All Work

Answer $ _____

Exemplary Response:

- $62.54

AND

- Correct process

Sample Process:

- $4 \times 5 = 20$ square yards

  $20 \times \$2.95 = \$59.00$

  $\$59.00 \times 0.06 = \$3.54$

  $\$59.00 + \$3.54 = \$62.54$

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct process; error in computation
1 point	Correct process for determining cost before sales tax OR Correct process for determining amount of sales tax
0 points	Other

SCORE POINT 3

4 Jessica needs new carpet in her room. The carpet she wants costs $2.95 per square yard.

If Jessica needs to buy a 4-yard by 5-yard piece of carpet, what will be the cost of the carpet after paying a 6% sales tax?

Show All Work

4yds
× 5yds
20sq. yds ✓

1 1
$2.95
× 20
000
5900
$59.00 ✓

5
$59
× .06
354
000
$3.54 ✓

1
$59.00
+ 3.54
$62.54 ✓

Answer $ 62.54

Test 8—Question 4 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $62.54. The response receives a Score Point 3.

SCORE POINT 2

4 Jessica needs new carpet in her room. The carpet she wants costs $2.95 per square yard.

If Jessica needs to buy a 4-yard by 5-yard piece of carpet, what will be the cost of the carpet after paying a 6% sales tax?

Show All Work

4
× 5
20

1 1
$2.95
× 20
$59.00
+ 3.54
56.54

Answer $ $56.54

Test 8—Question 4 Score Point 2

This response shows a correct process. However, the student makes an error in computation when adding $59 and $3.54, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 8—Question 4
Score Point 1

This response shows only a correct process for determining cost before sales tax. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 Jessica needs new carpet in her room. The carpet she wants costs $2.95 per square yard.

If Jessica needs to buy a 4-yard by 5-yard piece of carpet, what will be the cost of the carpet after paying a 6% sales tax?

Show All Work

$$\begin{array}{r} 4 \\ \times\ 5 \\ \hline 20 \end{array} \qquad \begin{array}{r} \$2.95 \\ \times\ 20 \\ \hline \$59 \end{array}$$

Answer $ 59.00

Test 8—Question 4
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

4 Jessica needs new carpet in her room. The carpet she wants costs $2.95 per square yard.

If Jessica needs to buy a 4-yard by 5-yard piece of carpet, what will be the cost of the carpet after paying a 6% sales tax?

Show All Work

$$\begin{array}{r} 12 \\ 15 \\ +\ \$2.95 \\ \hline \end{array}$$

Answer $ 53.82

Test 8—Question 5: Data Analysis and Probability

5 Ms. Talbot gave a math quiz to 10 students. Their scores are shown below.

12 19 13 13 14 12 15 19 19 14

What is the mode of the quiz scores?

Answer _____

The mean quiz score is 15.

Is the mean or the mode a better reflection of the typical quiz score? On the lines below, explain how you know.

_____

_____

_____

_____

_____

Exemplary Response:

- 19

AND

- The mode represents the scores of three students which happens to be the highest quiz score. This is not a reflection of the typical quiz score. The mean takes all scores into account so it is a better representation of the typical quiz score.

OR

- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

SCORE POINT 2

5 Ms. Talbot gave a math quiz to 10 students. Their scores are shown below.

12 19 13 13 14 12 15 19 19 14

What is the mode of the quiz scores?

Answer 19

The mean quiz score is 15.

Is the mean or the mode a better reflection of the typical quiz score? On the lines below, explain how you know.

The mean because it is around all the numbers. The mode isn't, it is the highest.

Test 8—Question 5
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 19 and gives a correct explanation for which measure is a better reflection of a typical quiz score. The response receives a Score Point 2.

Test 8—Question 5
Score Point 1

This response shows a correct answer of 19. However, the student gives an invalid explanation for which measure is a better reflection of a typical quiz score. Therefore, this response receives a Score Point 1.

SCORE POINT 1

5 Ms. Talbot gave a math quiz to 10 students. Their scores are shown below.

12 19 13 13 14 12 15 19 19 14

What is the mode of the quiz scores?

Answer 19

The mean quiz score is 15.

Is the mean or the mode a better reflection of the typical quiz score? On the lines below, explain how you know.

The mean is a better reflection shows more info

SCORE POINT 0

5 Ms. Talbot gave a math quiz to 10 students. Their scores are shown below.

12 19 13 13 14 12 15 19 19 14

What is the mode of the quiz scores?

12, 12, 13, 13, 14, 14, 15, 19, 19, 19

Answer 14

The mean quiz score is 15.

Is the mean or the mode a better reflection of the typical quiz score? On the lines below, explain how you know.

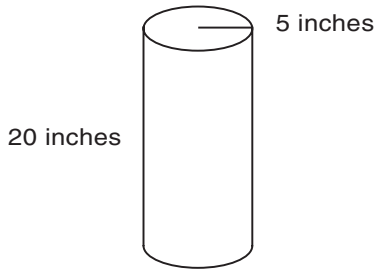
I think mean. because it's the average and the average is more important than mode in this problem.

Test 8—Question 5
Score Point 0

This response shows an incorrect answer and an invalid explanation. Therefore, this response receives a Score Point 0.

Test 8—Question 6: Measurement

6 Martin wants to put his collection of baseball hats into a cylindrical container that has a radius of 5 inches and a height of 20 inches.



What is the VOLUME, in cubic inches, of the container?

Show All Work

Answer _____ cubic inches

Exemplary Response:

- 500π cubic inches

OR

- 1,570 cubic inches (using 3.14 for π)

OR

- 1,571.43 cubic inches (using $\frac{22}{7}$ for π)

OR

- 1,570.80 cubic inches (using the π key)

OR

- Other valid response

AND

- Correct process

Sample Process:

- $V = \pi r^2 h$
  $= 3.14 \times 5^2 \times 20$
  $= 3.14 \times 25 \times 20$
  $= 3.14 \times 500$
  $= 1{,}570$

OR

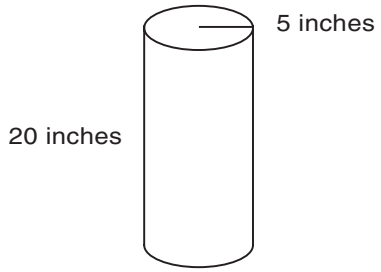
- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

SCORE POINT 2

6 Martin wants to put his collection of baseball hats into a cylindrical container that has a radius of 5 inches and a height of 20 inches.



What is the VOLUME, in cubic inches, of the container?

Show All Work

$V = \pi r^2 h$
$V = 3.14 \cdot 5^2 \cdot 20$ (inches)
$V = 1{,}570$ in.^{3}

Answer 1,570 cubic inches

Test 8—Question 6
Score Point 2

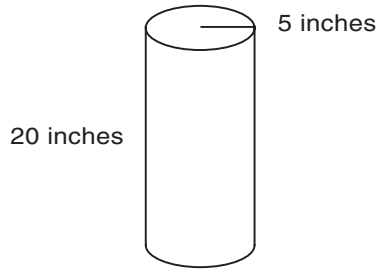
This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 1,570 cubic inches. The response receives a Score Point 2.

Test 8—Question 6
Score Point 1

This response shows a correct process. However, the student makes an error in computation when multiplying π and 500, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 Martin wants to put his collection of baseball hats into a cylindrical container that has a radius of 5 inches and a height of 20 inches.



What is the VOLUME, in cubic inches, of the container?

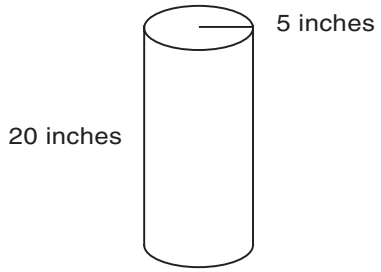
Show All Work

$V = \pi r^2 h = \pi r \times r \times h$
$= \pi 5^2 20 = \pi \times 5^2 \times 20$
$\pi \times 25 \times 20$
$\pi \times 500$
$= 1{,}000$

Answer 1,000 cubic inches

SCORE POINT 0

6 Martin wants to put his collection of baseball hats into a cylindrical container that has a radius of 5 inches and a height of 20 inches.



What is the VOLUME, in cubic inches, of the container?

Show All Work

5 × 5 × 20
25 × 20 = 500

Answer 500 cubic inches

Test 8—Question 6
Score Point 0

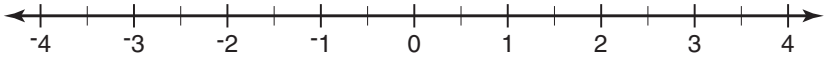
This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 7: Number Sense

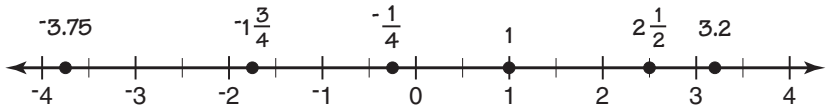
7 Look at the numbers below.

-3.75 $\quad -\frac{1}{4}$ $\quad 2\frac{1}{2}$ $\quad 3.2$ $\quad -1\frac{3}{4}$ $\quad 1$

Plot the point for each of these numbers on the number line below. Write the number above each point plotted.



Exemplary Response:

- 

Rubric:

2 points Exemplary response

1 point All points correctly plotted but not labeled or incorrectly labeled

OR

Four or five points correctly plotted and labeled

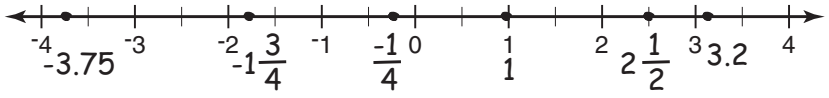
0 points Other

SCORE POINT 2

7 Look at the numbers below.

-3.75 $-\frac{1}{4}$ $2\frac{1}{2}$ 3.2 $-1\frac{3}{4}$ 1

Plot the point for each of these numbers on the number line below. Write the number above each point plotted.



Test 8—Question 7
Score Point 2

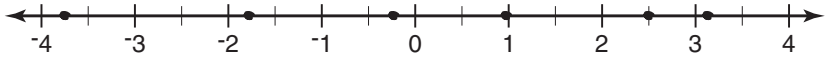
This response matches the exemplary response contained in the rubric. The student shows all six points plotted and labeled correctly. The response receives a Score Point 2.

SCORE POINT 1

7 Look at the numbers below.

-3.75 $-\frac{1}{4}$ $2\frac{1}{2}$ 3.2 $-1\frac{3}{4}$ 1

Plot the point for each of these numbers on the number line below. Write the number above each point plotted.



Test 8—Question 7
Score Point 1

This response shows all six points plotted correctly. However, the student does not label the points. Therefore, this response receives a Score Point 1.

Test 8—Question 7
Score Point 0

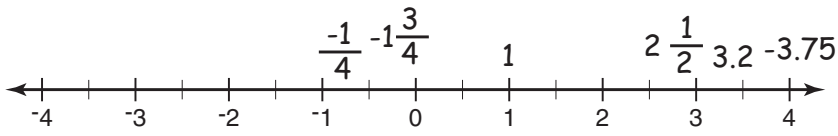
This response shows only three points labeled correctly and no points plotted. Therefore, this response receives a Score Point 0.

SCORE POINT 0

7 Look at the numbers below.

-3.75 $-\frac{1}{4}$ $2\frac{1}{2}$ 3.2 $-1\frac{3}{4}$ 1

Plot the point for each of these numbers on the number line below. Write the number above each point plotted.



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Grade 7
Mathematics

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Indiana Department of Education